The 1998 National Air Pollutant Emission Trends Database Developments for fiscal year 1998:

Welcome to the US EPA National Air Pollutant Emission Trends Website! This year, the US EPA did not publish the National Air Pollutant Emission Trends Report. Instead, we have prepared this brief on-line update. Look for a full report in October, 1999. US EPA did update the National Emission Trends database (hereinafter referred to as the NET), however; making improvements to some previous estimates and adding 1997 values. In addition, a 1996 National Toxics Inventory was developed.

This update is comprised of a discussion of new methodologies, a brief discussion of the greenhouse gas inventory, new toxics data, an appendix (A) listing summary tables that includes biogenic emissions, and an appendix (B) listing particulate matter and ammonia methods.

METHODOLOGIES THAT ARE NEW:

Changes in emission estimation methods occurred for a few source categories. For the non-road category, changes have resulted in a net decrease overall, but several tier 3 categories have increased. Other increases for 1996 compared to last year' s database are a result of revised activity data for categories such as fuel combustion, utilities, and miscellaneous fugitive dust.

Method changes are described below. For a brief discussion of methodologies for categories not mentioned below, please refer to the 1900-1996 report located at www.epa.gov/oar/emtrnd96. And for a more detailed discussion, refer to the National Air Pollutant Emission Trends Procedures Document located at www.epa.gov/ttn/chief/ei_data.html#ETDP.

MOBILE SOURCES

NON-ROAD VEHICLE ESTIMATES

Diesel, revised Trend Lines: For most nonroad diesel equipment types (i.e., 7-digit Source Classification Codes, or SCC) emission estimates for 1986 to 1997 were obtained from the Office of Mobile Sources (OMS) draft NONROAD Model. (This draft model is an updated version of the earlier draft model used for the nonroad diesel numbers in the December 1997 Trends Report.) A trend line back to 1970 was then obtained by normalizing the nonroad emission estimate using a ratio of 1986 model output to the existing estimate for each equipment category.

Large increases were seen in PM10 and NOx diesel estimates for the 1996 database year (refer to the *National Air Pollutant Emission Trends Report*, October 1996). This was due to the use of the draft NONROAD model. However, further refinements were developed on the new draft of the model for this database year, and results are reflected in Appendix A of this update. About half of the nonroad diesel categories show an increase over last year' s (December

1997 *Report*) estimates. However, there is a **NET** total *decrease* in the nonroad diesel category. This is due to the large decrease seen in the "farm" category. PM-10 and NOx are the two most important pollutants generated from nonroad diesel sources.

The increases for the two most recent Trends inventories are, in general, due to more accurate equipment populations, changes in other parameters (hours annual usage), and the addition of new equipment types (i.e., 10-digit SCCs) within these categories. These equipment types include:

1) Industrial, AC/Refrigeration;
2) Industrial, Other Oil Field Equipment;
3) Farm, Irrigation Sets;
4) Construction and Mining, Other Underground Mining Equipment; and
5) Railroad, Railway Maintenance.

The newer draft NONROAD model generated SO2 emissions which were, in general, not calculated previously for nonroad diesel.

(For information on the NONROAD model, refer to the website http://www.epa.gov/oms/nonrdmdl.htm).

Airport service: This category was not estimated with the NONROAD Model, since the methodology for this category is still under review. Refer to Sections 4.7.3 through 4.7.6 of the *Procedures Document (link can be found on the main Update webpage*) for information on airport service estimation methods.

FUGITIVE DUST SOURCES

The estimate for "geogenic wind erosion" was carried over from 1996, since methods for estimating this category are under review. The **1999** Trends Report is expected to include revised values for this category along with an explanation of methods.

MISCELLANEOUS SOURCES

OTHER COMBUSTION

Structural fires: Structural fire emission methods for 1996 were revised for 42 states and the District of Columbia. The "National Fire Incident Reporting System" (NFIRS) was used to compile the number of fires per state. For those States that reported, the percentage of fire stations reporting relative to the total number of fire stations within each State was calculated (since typically only a percentage of the fire stations report data to NFIRS). Then the number of fires were scaled up to estimate the actual number (i.e., reported and unreported) of fires occurring within a State for 1996. Using these data, along with State populations, a State-specific per capita factor was developed to allocate activity to the county level. If a State did not report to NFIRS, a default per capita factor based on the national estimate of structural fires from the

National Fire Protection Agency was used. The activity was then multiplied by the appropriate loading factor and emission factor. 1997 structural fire emissions were then estimated by growing 1996 emissions using population as a surrogate.

The remaining states supplied actual 1990 structural fire data for their States through the Ozone Transport and Assessment Group (OTAG) process. These data were extrapolated, using population surrogates, to 1996 last year, and again this year to 1997. A table of these OTAG states can be found in the Procedures Document referred to above.

METHODOLOGIES FOR PM2.5 AND NH_3:

Methods for PM2.5 and NH_3 are listed in Appendix B of this report. However, please note the following:

Information published by the EPA in Chapter 4 of the Air Quality and Emission Trends Report, December 1998, EPA-454/R-98-016, suggests that the presence of PM2.5 crustal materials in the ambient air is much lower than is suggested by the magnitude of the the emissions as presented in this Trends update. (Crustal material emissions are generally those associated with the fugitive dust and geogenic materials and they comprise over ½ of the PM2.5 inventory). Preliminary investigation indicates that many of these emissions are removed very close to the source owing to their low release height, interaction with their surroundings (e.g., impaction, vegetative filtration) and lack of inherent thermal buoyancy. Thus, the crustal materials emission estimates contained herein should not be used to infer their contribution to PM2.5 ambient concentrations unless appropriate adjustments or accommodation in transport models are made to account for the near source removal of these particles. Emission mechanisms for many sources of ammonia are not well understood and much research is ongoing to improve methods for estimating ammonia emissions.